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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,817	04/24/2006	Tae Kim II	4883-2	2270

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EXAMINER
MOOREHEAD, OWEN L

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,817	KIM ET AL.	
	Examiner	Art Unit	
	OWEN MOOREHEAD	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,8,11,14,16,17 and 19-23* is/are rejected.

7)☒ Claim(s) *6,9,10,12,13,15 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/24/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. **Claims 7,8,11,19, & 22** are rejected under 35 U.S.C. 102(e) as being anticipated by Poykko (WIPO Publication No. WO 2004/002182).

Regarding **claim 7,** Poykko discloses a method of determining a location of a mobile communication device in a mobile communication network including a plurality of base stations and repeaters, comprising the steps of: receiving a plurality of pieces of base station signal information transmitted from the base station to the device. **(See page 8 line 21 - page 9 line 5 and Figure 1 where Poykko discloses a mobile station is capable of receiving signal information from all base stations or repeaters located within communication range).**

Determining one of a base station and a repeater corresponding to each of the base station signal information based on propagation delay time information; generating vector information associated with the plurality of the base stations and repeaters based on geographic information corresponding to one of the determined base station and the repeater. **(See page 5 and lines 15 – 30 where Poykko discloses a method for calculating an estimate of the distance between the base station and mobile device or repeater and mobile device).**

Generating location information of the device according to the generated vector information. **(See page 11 lines 23 - 29 where Poykko discloses the location of the device is generated using all measurement and network data information).**

Wherein the step of generating the vector information comprises the steps of: determining a predetermined vector proceeding order associated with the plurality of the base stations and repeaters according to the base station signal information. Sequentially determining a vector with respect to the plurality of the base stations and repeaters according to the determined vector proceeding order with one of the base station and repeater in which the device is currently communicating with as a starting point. **(See page 11 and lines 6 – 17 where Poykko discloses there are multiple ways to determine which base station goes first to generate the vector for the location estimate of the mobile device).**

Regarding **claim 8 in view of claim 7,** Poykko discloses a method wherein the mobile communication network is based on a synchronous network, the base station signal information comprises a propagation delay time, and, in the step of determining the predetermined vector proceeding order, the vector proceeding order is determined to be in the order of the smallest to the largest propagation delay time. **(See page 3 where the measured physical quantity includes time delay coming from the base station or the repeater. It would have been obvious to one of ordinary skill in the art at the time of the invention to organize the signals based on time delay from smallest delay to largest delay in order to compute vectors in an order based on distance from the device).**

Regarding **claim 11 in view of claim 7,** Poykko discloses a method wherein the mobile communication network is based on an asynchronous network and the base station signal information comprises a round trip time. **(See paragraph 6 where Poykko discloses measured physical quantity contains time delay. This time delay can include round trip time).**

Regarding **claim 19,** Poykko discloses a location determination system for determining a location of a mobile communication device in a mobile communication network including a plurality of base stations and repeaters, comprising: a data collection unit receiving a plurality of pieces of base station information transmitted from the base station to the device. **(Poykko discloses on page 10 lines 16 - 23 a mobile station that receives signals from all base stations and repeaters within radio range).**

A signal analysis unit determining one of the base station and the repeater corresponding to each of the base station signal information based on the base station signal information. **(Poykko discloses on page 10 lines 24 – 30 a mobile station determines if a signal came from a base station or a repeater).**

A vector generating unit generating vector information associated with the plurality of the base stations and the repeaters based on geographic information corresponding to the one of the determined base station and the repeater. **(See page 5 and lines 15 – 30 where Poykko discloses a method for calculating an estimate of the distance between the base station and mobile device or repeater and mobile device).**

A location determination unit determining location information of the device according to the generated vector information. **(See page 11 and line 23 - page 12 line 6 where the location algorithm estimates a location of the mobile device).**

Wherein the vector generating unit determines a predetermined vector proceeding order associated with the plurality of the base stations according to the base station signal information and sequentially determining the vector with respect to the plurality of the base stations according to the determined vector proceeding order with one of the base station and the repeater with which the device is now communicating as a starting point. **(See page 11 and lines 6 – 17 where Poykko discloses there are multiple ways to determine which base station goes first to generate the vector for the location estimate of the mobile device).**

Regarding **claim 22 in view of claim 19,** Poykko discloses a system wherein the location determination system is installed in the mobile communication device. **(See page 20 lines 16 - line 24 where Poykko discloses the location calculation unit can be located in the mobile device).**

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 1,3-5, & 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagefalk et al. (U.S. Publication No. 2003/0220116 A1 or 'Sagefalk' hereinafter) in view of Law et al. (U.S. Publication No. 2005/0227707 A1 or 'Law' hereinafter).

Regarding **claim 1,** Sagefalk discloses a method of determining a location of a mobile communication device in a mobile communication network including a plurality of base stations, comprising the steps of: receiving a plurality of pieces of base station signal information, the base station signal information including base station identification information, the base stations

transmitting the base station signal information to the mobile communication device. Determining a base station corresponding to each of the plurality of pieces of base station signal information based on the base station identification information. **(See paragraph 16 and 17 where Sagefalk discloses acquiring the identity of at least on of the plurality of base stations within transmission range of the mobile device). Sagefalk does not explicitly disclose generating vectors.**

However, Law discloses generating vector information associated with the plurality of the base stations based on geographic information corresponding to the determined base station. **(See paragraph 27 where Law discloses a signal strength vector coordinates generation module configured for generating vectors based on signal strengths between a plurality of devices).**

Generating location information of the device according to the generated vector information, wherein the step of generating the vector information comprises the steps of: determining a predetermined vector proceeding order associated with the plurality of the base stations according to the base station signal information. Sequentially determining a vector with respect to the plurality of the base stations according to the determined vector proceeding order, with the base station in which the device is currently communicating with as a starting point. **(See paragraph 54 where Law discloses vector generation module to calculate three dimensional coordinate representation for the position of each wireless network device in the wireless networks. It would have been obvious to one of ordinary skill in the art at the time of the invention to determine of how to calculate the vectors pertaining to a plurality**

of base stations. In doing, the current base station that the mobile device is connected to can be the starting point or another mechanism can be used).

Sagefalk discloses a method and apparatus for determining the position of a portable device. The portable device receives signals from a plurality of devices and identifies each base station according to their identity. Law discloses a system and method for location and motion detection in a home wireless network. The portable device receives information from the base stations regarding signal strength and generates vectors according to this information. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Sagefalk with Law in order develop an overall system, method, and apparatus that is capable of receiving information from a plurality of base stations. This information can include codes identifying base stations or the signal strength being received by the mobile device. With this information, the mobile device will be able to calculate its current location using vectors.

Regarding **claim 3 in view of claim 1,** Law discloses a method wherein the mobile communication network is based on an asynchronous network and the base station signal information comprises received signal strength information, and, in the step of determining the predetermined vector proceeding order, the vector proceeding order is determined by the order of the strength of the measured received signal. **(See paragraph 22 where Law discloses the mobile device performs analysis on the signal strength received from the base stations).**

Regarding **claim 4 in view of claim 1,** Law discloses a method wherein the base station signal information comprises received signal strength information, and, in the step of determining the predetermined vector proceeding order, a base station associated with the base station signal information whose measured received signal strength is less than a predetermined value is excluded from the vector proceeding order. **(See paragraph 27 where Law discloses a method where Law discloses a signal strength module for monitoring the signal strength of a plurality of devices in the wireless network).**

Regarding **claim 5 in view of claim 1,** Law discloses a method wherein the step of sequentially determining the vector with respect to the plurality of the base stations comprises the steps of: determining a direction of the vector from a first base station that is a former to a second base station that is a latter; computing a distance between the first base station and the second base station and determining the size of the vector by multiplying the distance by a predetermined value; and determining the vector between the first base station and the second base station based on the direction and the size of the vector. **(See paragraph 56 where the vector distance can be calculated from on point to another. Based on the calculated vector, the direction of the vector can be determined based upon the origination point and the destination point).**

Regarding **claim 23 in view of claim 1,** Sage and Law do not explicitly disclose computer readable medium a computer readable recording medium in which a program for executing the method is recorded.

However, claim 23 is rejected on the basis of claim 1 because it would be obvious to one of ordinary skill in the art at the time of the invention that in order to receive signals, process it, and calculate a location, the program must be stored on a computer readable medium.

7. **Claims 2 & 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagefalk et al. (U.S. Publication No. 2003/0220116 A1 or 'Sagefalk' hereinafter) in view of Law et al. (U.S. Publication No. 2005/0227707 A1 or 'Law' hereinafter) in view of Ito (U.S. Patent No. 6,108,556).

Regarding **claim 2 in view of claim 1,** Sagefalk and Law do not explicitly disclose a synchronous network with propagation delay.

However, Ito discloses a method wherein the mobile communication network is based on a synchronous network and the base station signal information comprises propagation delay time information, and, in the step of determining the predetermined vector proceeding order, the vector proceeding order is determined by the order of the small propagation delay time. **(See column 2 lines 21 – 32 where Ito discloses the mobile stations use delay times to identify the location of the mobile station. It would have been obvious to one of ordinary skill to determine a vector proceeding order based on propagation delay time from smallest to largest, largest to smallest, or randomly).**

Sagefalk and Law disclose methods, systems, and apparatuses for locating a mobile device in a network. Ito teaches a method and system for locating a mobile station based

on mobile communication systems. The mobile station uses propagation delay times from the different base stations to determine the location of the mobile device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Sagefalk and Law with the teaching of Ito to have a different mechanism to determine the location of a mobile device. The overall invention will use base station identity, signal strength, and propagation delay to determine the location of the mobile device.

Regarding **claim 14 in view of claim 1,** Ito discloses a method further comprising the steps of: dividing an area covered by the mobile communication network into a plurality of grids, determining second base station signal information with respect to the divided grid in association with second location information, storing and maintaining the second base station signal information in a second database, the second location information determined with respect to the divided grid by a predetermined second device location determination method. **(See abstract and column lines 55 – 60 where the location of the mobile station is displayed on a grid system. See column 7 line 41 – 53 where the mobile station receives information from a multiple of base stations. See column 6 line 11 – 15 where the values are stored in a database. It would have been obvious to one of ordinary skill in the art at the time of the invention to store the values of each base station in separate databases).**

Searching the second location information corresponding to the base station signal information from the second database by comparing the base station signal information and the

second base station signal information. **(See column 6 lines 11 – 15 where Ito discloses the values saved are used to identify the corresponding base stations).**

Generating final location information based on the second location information and the location information. **(See column 8 lines 8 – 25 where Ito discloses generating final location information).**

Sagefalk and Law disclose methods, systems, and apparatuses for locating a mobile device in a network. Ito teaches a method and system for locating a mobile station based on mobile communication systems. The mobile station uses propagation delay times from the different base stations to determine the location of the mobile device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Sagefalk and Law with the teaching of Ito to have a different mechanism to determine the location of a mobile device. The overall invention will use base station identity, signal strength, and propagation delay to determine the location of the mobile device.

8. **Claims 16 & 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagefalk et al. (U.S. Publication No. 2003/0220116 A1 or 'Sagefalk' hereinafter) in view of Law et al. (U.S. Publication No. 2005/0227707 A1 or 'Law' hereinafter) in view of Ito (U.S. Patent No. 6,108,556) in view of Hunzinger (U.S. Publication No. 2002/0025822 A1).

Regarding **claim 16 in view of claim 14,** Sagefalk, Law, and Ito do not explicitly disclose a method of receiving data using GPS.

However, Hunzinger discloses a method wherein the second device location determination method is performed by using a GPS receiving apparatus. **(See paragraph 17 where Hunzinger discloses a mobile station that is capable of obtaining information regarding its position using GPS).**

Sagefalk, Law, and Ito disclose methods, systems, and apparatuses for locating a mobile device in a network. Hunzinger discloses a method for determining the location of a mobile unit. The mobile station determines its location using triangulation, GPS, or any other method. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Sagefalk, Law, and Ito with the teaching of Hunzinger have a different mechanism to determine the location of a mobile device. The mobile station can use information received through GPS or triangulation to determine the location of the device. Information received at the mobile may contain base station identity, signal strength, or propagation delay to determine the location of the mobile device.

Regarding **claim 17 in view of claim 14,** Hunzinger discloses a method further comprising the steps of: determining third location information by using a second device including the GPS receiving apparatus; receiving third base station signal information with respect to the third location information by using the second device; and updating the second base station information stored in the second database based on the third base station signal information. **(See paragraph 17 where Hunzinger discloses a mobile station that is capable of obtaining information regarding its position using GPS. With the information received**

from the GPS or triangulation, location calculation is performed to calculate the distance between the mobile device and the base station or repeater. Once this calculation is performed for each base station or repeater, you will have an estimated location of the device and the information can be stored in memory).

Sagefalk, Law, and Ito disclose methods, systems, and apparatuses for locating a mobile device in a network. Hunzinger discloses a method for determining the location of a mobile unit. The mobile station determines its location using triangulation, GPS, or any other method. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Sagefalk, Law, and Ito with the teaching of Hunzinger have a different mechanism to determine the location of a mobile device. The mobile station can use information received through GPS or triangulation to determine the location of the device. Information received at the mobile may contain base station identity, signal strength, or propagation delay to determine the location of the mobile device.

9. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Poykko (WIPO Publication No. WO 2004/002182) in view of Ito (U.S. Patent No. 6,108,556).

Regarding **claim 20 in view of claim 19,** Ito discloses a system further comprising: a second database storing second base station signal information with respect to grids in association with second location information, an area covered by the mobile communication network being divided into the grids, the second location information being determined by a

predetermined second device location determination method; and a second location determination unit searching the second location information corresponding to the base station signal information from the second database by comparing the base station signal information and the second base station signal information and generating final location information based on the location information and the location information. **(See abstract and column lines 55 – 60 where Ito discloses the location of the mobile station is displayed on a grid system. See column 7 line 41 – 53 where the mobile station receives information from a multiple of base stations. See column 6 lines 11 – 15 where Ito discloses the values saved are used to identify the corresponding base stations).**

Poykko discloses a method for detecting signal path detection for wireless networks. The mobile device will be able to determine if the signal came from a base station or a repeater. With this information, the mobile device can estimate its current location. Ito teaches a method and system for locating a mobile device based on mobile communication systems. The mobile station uses propagation delay times from the different base stations to determine the location of the mobile device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Poykko with the teaching of Ito to determine the location of a mobile device based on the signal strength or propagation delay received from the base station or repeater. The invention will be able use base station identity, signal strength, and propagation delay to determine the location of the mobile device.

10. **Claim 2**1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poykko (WIPO Publication No. WO 2004/002182) in view of Ito (U.S. Patent No. 6,108,556) in view of Hunzinger (U.S. Publication No. 2002/0025822 A1).

Regarding **claim 21 in view of claim 20,** a system further comprising: a third location determination unit determining third location information by using a second device including a GPS receiving apparatus; a second data collection unit receiving third base station signal information with respect to the third location information by using the second device; and a base station information update unit updating the second base station information stored in the second database based on the third base station signal information. **(See paragraph 17 where Hunzinger discloses a mobile station that is capable of obtaining information regarding its position using GPS. With the information received from the GPS or triangulation, location calculation is performed to calculate the distance between the mobile device and the base station or repeater. Once this calculation is performed for each base station or repeater, you will have an estimated location of the device and the information can be stored in memory).**

Poykko and Ito both disclose a method for locating a mobile device in a communication network. Hunzinger discloses a method for determining the location of a mobile unit. The mobile station determines its location using triangulation, GPS, or any other method. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Poykko with the teaching of Hunzinger to receive information relating to signal strength and propagation delay through GPS,

triangulation, or other means. This would provide the mobile device with more options on how to calculate its current location.

Allowable Subject Matter

11. **Claims 6,9,10,12,13,15 & 18** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OWEN MOOREHEAD whose telephone number is (571) 270-7299. The examiner can normally be reached on Monday - Friday 8:00am - 4:30pm EST with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RAFAEL PEREZ - GUTIERREZ can be reached on (571) 272-7915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rafael Pérez-Gutiérrez/
Supervisory Patent Examiner, Art Unit 2617